Space Weather Forecast

Issued on Thursday, 29 June 2023 at 01:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate solar activity likely. Slight chance of Minor Geomagnetic Storm day 3 (1st July).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Moderate, with one Moderate flare observed at 28/0844UTC from a sunspot in the northwest quadrant. A large and complex sunspot region continues to grow near centre disc and is its most prominent feature. There are five other regions presently on the disc, but all these regions remained small or simple, with no significant change.
A Coronal Mass Ejection (CME) which left the northeast of the Sun late on 27 June has been analysed and is forecast to glance the Earth on 01 July, but with low confidence. No further Earth directed CMEs were observed in the period.

Solar Wind / Geomagnetic Activity: The solar wind speed was slightly elevated but gradually declining from around 470 to 430 km/s. The total magnetic field strength was weak, with the important north-south component of the magnetic field varying weakly. Geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has been at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low to Moderate, with a slight chance of Strong flares, mainly from the large sunspot near centre disc.

Solar Wind / Geomagnetic Activity: A CME which left the Sun on 27 June may glance the Earth on 01 July, but with low confidence. Otherwise, solar wind speeds are expected to be relatively muted. Geomagnetic activity is forecast to be Quiet to Unsettled, with a slight chance of a G1/Minor Storm around the 1st July due to the possible glancing CME.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is most likely to remain at background levels with no solar radiation storms occurring. However, there is a slight chance of count rates increasing should any larger flares occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	10	20	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	60	60	50	50
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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